REMARKS

Reconsideration of the present application is respectfully requested in view of the following remarks. Prior to entry of this response, Claims 1-10, 15, and 17-30 were pending in the application, of which Claim 19 is independent and the only claim not withdrawn. In the Office Action dated November 3, 2003, Claim 19 was rejected under 35 U.S.C. §112, §102(b), and §102(e). Applicants hereby address the Examiner's rejections in turn.

I. Rejection of Claim 19 Under 35 U.S.C. §112, First Paragraph

In the Office Action dated November 3, 2003, the Examiner rejected Claim 19 under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way to reasonably convey to one skilled in the art, at the time the application was filed, that the inventors had possession of the claimed invention. Applicants respectfully traverse this rejection.

The Examiner rejected Claim 19 under 35 U.S.C. § 112 alleging that a lower electrode having a side and upper surface, wherein a surface area of the side being larger than a surface area of the upper surface is not supported by the original specification and/or drawings. Further, the Examiner stated in the "Response to Arguments" that, in particular, as described in page 33, line 25 to page 34, line 12, the portion of the storage node electrode 27 is etched back by about 50 nm and then the silicon nitride layer 121 is formed on the storage electrode 27; as the result, a side of the storage electrode will be decreased and the surface area of the side will also be decreased; the specification does not state a surface area of the side being larger than

a surface area of the upper surface after the storage node is etched back. (*See* Office Action, page 5, lines 6-11.)

Applicants respectfully submit that a surface area of the side being larger than a surface area of the upper surface is fully supported by the original specification and drawings. For example, the description from page 21, line 24 to page 22, line 4, states that an $SrRuO_3$ film (storage node electrode material 27) is deposited on the overall surface including the surface of the barrier metal layer 24 at the bottoms of the exposed holes 45 by, for example, the CVD method or sputtering to a thickness of about 400 nm. In addition, the description on page 27, lines 20–26, states that the crystallinity of the capacitor insulating film on the top of the storage node electrode is inferior to that on the side of the storage node electrode; however, since the ratio of the area of the top to that of the side is as low as 15%, the capacitance can be increased by increasing the dielectric constant of the BST film on the side. Therefore, surface area A_{S1} of the side and surface area A_t of the upper surface of the storage node electrode material 27 may be:

$A_{S1} = 400L$; and

$A_t = A_{S1} \times 0.15 = 400L \times 0.15 = 60L$,

where L is the circumference of the storage node electrode material 27.

The description from page 33, line 25, to page 34, line 12, states that the portion of the storage node electrode 27 is etched back by about 50 nm. As mentioned above, the thickness of the storage node electrode 27 before it is etched back is about 400 nm. Therefore, height H of the storage node electrode 27 shown in FIGS. 8A and 8B is: H =

400 – 50 = 350 nm. Accordingly, surface area A_{S8} of the side of the storage node electrode 27 in the figures is: A_{S8} = 350L. The upper surface of the storage node electrode 27 shown in the figures is not subjected to any processing for widening its area. Accordingly, the surface area of the upper surface of the storage node electrode 27 shown in FIGS. 8A and 8B is the same as that shown in FIGS. 1A and 1b, namely, At = 60L. Comparing surface area A_{S8} (= 350L) of the side and surface area A_t (= 60L) of the upper surface, surface area A_{S8} of the side is obviously larger than surface area A_t of the upper surface.

Accordingly, a surface area of the side of the storage node electrode 27 of FIGS. 8A and 8B is larger than that of the upper surface can be directly and univocally derived from the original specification. Therefore, at least for the aforementioned reasons a lower electrode having a side and upper surface, wherein a surface area of the side being larger than a surface area of the upper surface is fully supported by the original specification and drawings.

II. Rejection of Claim 19 Under 35 U.S.C. § 102(b) and 35 U.S.C. § 102(e)

In the Office Action, the Examiner rejected Claim 19 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,567,964 ("*Kashihara*") and under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,451,665 ("*Yunogami* "). Claim 19 has been amended, and Applicants respectfully submit that the amendment overcomes this rejection and adds no new matter.

Amended Claim 19 is patentably distinguishable over the cited art in that it recites, for example, "a lower electrode comprising a plurality of crystal grains, the crystal grains containing a metallic element" and "a grain boundary between adjacent two of the plurality of crystal grains comprising the lower electrode being substantially perpendicular to an interface between the lower electrode and the capacitor insulating film."

Neither *Kashihara* nor *Yunogami* anticipates, or even renders obvious, the claimed invention because neither of these references discloses or suggests the aforementioned recitations of amended Claim 19. Accordingly, independent Claim 19 patentably distinguishes the present invention over the cited art, and Applicants respectfully request withdrawal of the rejection of Claim 19 under both 35 U.S.C. § 102(b) and under 35 U.S.C. § 102(e).

III. Conclusion

In view of the foregoing remarks, Applicants respectfully request the reconsideration and reexamination of this application and the timely allowance of the pending claims. The preceding arguments are based only on the arguments in the Office Action, and therefore do not address patentable aspects of the invention that were not addressed by the Examiner in the Office Action. The claims may include other elements that are not shown, taught, or suggested by the cited art. Accordingly, the preceding argument in favor of patentability is advanced without prejudice to other bases of patentability.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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